

CLAIMS

What is claimed is:

1. A dry etchant, comprising a component with the general formula $C_2H_xF_y$, where x is an integer from 3 to 5, inclusive, y is an integer from 1 to 3, inclusive, and
5 $x + y = 6$, said dry etchant being formulated to etch doped silicon dioxide with selectivity over at least undoped silicon dioxide.

2. The dry etchant of claim 1, also being formulated to etch doped silicon dioxide with selectivity over silicon nitride.

10 3. The dry etchant of claim 1, including a combination of components.

4. The dry etchant of claim 3, wherein said component is a primary etchant.

15 5. The dry etchant of claim 4, further comprising an additive.

6. The dry etchant of claim 5, wherein said additive comprises a halogenated carbon dry etchant material.

20 7. The dry etchant of claim 5, wherein said additive comprises a fluorocarbon having at least as many hydrogen atoms as fluorine atoms.

8. The dry etchant of claim 7, wherein said fluorocarbon comprises at least one of CH_2F_2 and CHF_3 .

25 9. The dry etchant of claim 5, wherein said additive comprises at least one of CF_4 and CHF_3 .

10. The dry etchant of claim 4, wherein said additive increases a rate with which said dry etchant etches doped silicon dioxide over a rate at which said component alone etches doped silicon dioxide.

5 11. The dry etchant of claim 10, wherein said additive comprises at least one of CF_4 and CHF_3 .

10 12. The dry etchant of claim 4, wherein said additive increases a selectivity with which said dry etchant etches doped silicon oxide over at least undoped silicon dioxide over said selectivity of said component alone.

13. The dry etchant of claim 12, wherein said additive comprises at least one of CH_2F_2 and CH_3F .

15 14. The dry etchant of claim 4, wherein said additive increases a selectivity of said dry etchant for one type of doped silicon dioxide over another type of silicon dioxide over said selectivity of said component alone.

20 15. The dry etchant of claim 3, wherein said component comprises an additive for use with another, primary etchant.

16. The dry etchant of claim 15, wherein said primary etchant comprises at least one of CF_4 and CHF_3 .

25 17. The dry etchant of claim 15, wherein said combination of said component and said primary etchant etches doped silicon dioxide with greater selectivity over at least undoped silicon dioxide than a selectivity of said primary etchant alone.

18. The dry etchant of claim 15, wherein said combination of said component and said primary etchant etches doped silicon dioxide at a substantially normal rate.

19. The dry etchant of claim 3, wherein relative concentrations of said component and said primary etchant in said combination are tailored to provide for at least one of a desired etch selectivity doped silicon dioxide over undoped silicon dioxide, a desired etch selectivity of doped silicon dioxide over silicon nitride, and a desired etch rate of doped silicon dioxide.

20. A dry etchant comprising a component with the general formula $C_2H_xF_y$, where x is an integer from 3 to 5, inclusive, y is an integer from 1 to 3, inclusive, and $x + y = 6$, said dry etchant being formulated to etch doped silicon dioxide at a faster rate than at least undoped silicon dioxide.

21. The dry etchant of claim 20, also being formulated to etch doped silicon dioxide at a faster rate than silicon nitride.

22. The dry etchant of claim 20, including a combination of components.

23. The dry etchant of claim 22, wherein said component is a primary etchant.

24. The dry etchant of claim 23, further comprising an additive.

25. The dry etchant of claim 24, wherein said additive comprises a halogenated carbon dry etchant material.

26. The dry etchant of claim 24, wherein said additive comprises a fluorocarbon having at least as many hydrogen atoms as fluorine atoms.

27. The dry etchant of claim 26, wherein said fluorocarbon comprises at least one of CH_2F_2 and CH_3F .

28. The dry etchant of claim 24, wherein said additive comprises at least one of CF_4 and CHF_3 .

29. The dry etchant of claim 23, wherein said additive increases a rate with which said dry etchant etches doped silicon dioxide over a rate at which said component alone etches doped silicon dioxide.

30. The dry etchant of claim 29, wherein said additive comprises at least one of CF_4 and CHF_3 .

31. The dry etchant of claim 23, wherein said additive increases a selectivity with which said dry etchant etches doped silicon oxide over at least undoped silicon dioxide over said selectivity of said component alone.

32. The dry etchant of claim 31, wherein said additive comprises at least one of CH_2F_2 and CH_3F .

33. The dry etchant of claim 23, wherein said additive increases a selectivity of said dry etchant for one type of doped silicon dioxide over another type of silicon dioxide over said selectivity of said component alone.

34. The dry etchant of claim 22, wherein said component comprises an additive for use with another, primary etchant.

35. The dry etchant of claim 34, wherein said primary etchant comprises at least one of CF_4 and CHF_3 .

36. The dry etchant of claim 34, wherein said combination of said component and said primary etchant etches doped silicon dioxide with greater selectivity over at least undoped silicon dioxide than a selectivity of said primary etchant alone.

5 37. The dry etchant of claim 34, wherein said combination of said component and said primary etchant etches doped silicon dioxide at a substantially normal rate.

10 38. The dry etchant of claim 22, wherein relative concentrations of said component and said primary etchant in said combination are tailored to provide for at least one of a desired etch selectivity doped silicon dioxide over undoped silicon dioxide, a desired etch selectivity of doped silicon dioxide over silicon nitride, and a desired etch rate of doped silicon dioxide.